



Montana Fish, Wildlife & Parks

ENVIRONMENTAL ASSESSMENT

Transfer of Westslope Cutthroat Trout from Threemile Creek to Cottonwood Creek (Upper Missouri River Drainage)

I. Description of proposed action

A. Description of water body and action.

Receiving Waters:

Name: Cottonwood Cr.
Location: T14N,R2W,sec11, 16, 15, 19
County: Lewis and Clark County

Donating Waters:

Name: Threemile Cr.
Location: T11N,R5W,sec24
County: Lewis and Clark County

Montana Fish, Wildlife & Parks (FWP) propose transferring non-hybridized westslope cutthroat trout eyed eggs (WCT: *Oncorhynchus clarkii lewisi*) from Threemile Creek to Cottonwood Creek in the Upper Missouri River Drainage. Eyed eggs will be hatched in remote site incubators. Threemile Creek (donor) is located on private property in the Boulder – Highlands foothills near Helena. WCT will be introduced into Cottonwood Creek on the Beartooth Game Range (Figures 1 and 2).

Non-native brook trout have been removed from 8 miles of Cottonwood Creek upstream of a constructed fish barrier. Fish were removed with the use of piscicides on four occasions from 2002 to 2007 (separate environmental assessments 2003 and 2007). Threemile Creek supports one of the last two remaining non-hybridized populations of WCT in the Helena Valley. White suckers were illegally introduced to Threemile pond (AKA Hardie Pond) between 1999 and 2001. Numbers and condition of WCT declined as white sucker numbers increased. To prevent extirpation of the Threemile WCT population, suckers were removed from Threemile Pond with rotenone in 2005 (WCT were held at a separate location during treatment). Since removal of suckers and the transfer back to Threemile, the WCT population has flourished with some individuals reaching large sizes (15” to 17”). The Threemile Creek WCT population is entirely on private land. Uncertainty as to the future management of these lands, and the specter of future

illegal or accidental transfers of non-native fishes makes replication of this population a priority. Transfers of WCT from Threemile Creek over multiple years should offset problems related to low initial population size. It is often difficult to get more than 5 females and ten males from which to collect gametes because of low numbers of fish and low shocking efficiencies (spring runoff). In future, if low initial population size appears to be effecting the viability of the new Cottonwood Creek population, then additional eyed eggs, juveniles, or adults will be moved from the Threemile Creek population or another population in the same drainage (a separate EA will be prepared).

B. Need for Action:

The westslope cutthroat trout is ranked as imperiled because of rarity and vulnerability to extinction throughout its range by the Natural Heritage Network and the State of Montana. Genetically pure WCT occupy about 8% of their historical range in the western United States (Shepard et al. 2003) and less than 2% of their historical range in northcentral Montana within the Missouri River Drainage (Moser et al. 2007). The Upper Missouri River Drainage from Three Forks to Wolf Creek, Montana currently supports two populations of non-hybridized WCT in a total of less than ten miles of stream (less than 2% of historical habitat).

Major threats to WCT include: competition and hybridization with non-native rainbow trout (Leary et al. 1995; Hitt et al. 2003), competition with brook trout (Dunham et al. 2002; Peterson et al. 2004), and isolation of remaining non-hybridized populations above barriers in short headwater sections of stream. These small isolated populations are at risk of extinction from catastrophic events (e.g. fire, drought, disease) and may eventually suffer negative consequences of inbreeding (Wang et al. 2002). Translocations and transfers have been commonly used to augment established populations, re-establish historic populations, and in this case create refuge populations (Stockwell and Leberg 2002).

Past eyed egg fish transfers have successfully established WCT cutthroat populations in Montana (Lee Nelson. *pers. comm.*). In the event of a catastrophic loss of the Threemile Creek population or the new Cottonwood Creek population, either WCT population could be used as a re-founding donor. Though populations will not be identical because of adaptations to the new environment in Cottonwood Creek, replication should preserve some of the rare allelic diversity that is common in individual populations of WCT (Allendorf and Leary 1988).

II. Impacts of the proposed action

Please review the attached checklist on pages 8 to 13. The impacts of this action are included in the Environmental Assessment checklist. The following text addresses the impacts.

A. Impacts to the Physical Environment

Fish and Wildlife – *Section 5b and 5d of Checklist*

The proposed project would involve transfer of non-hybridized WCT in the form of eye eggs from Threemile Creek to Cottonwood Creek (both in Upper Missouri River Drainage). Reproducing fish will likely rapidly colonize Cottonwood Creek within 5 to 7 years of the initial transfers. Cottonwood Creek undoubtedly historically held native

WCT (Elkhorn Creek, an adjacent drainage holds hybridized WCT) and previously held brook trout prior to piscicide treatments.

Disease testing: This EA and a Wild Fish Transfer request were submitted to the Fish Health Committee in the spring of 2009. The FWP wild fish transfer policy will be followed and WCT will not be transferred until disease testing requirements of the FWP Fish Health Committee have been met. All fish that gametes are collected from will be sacrificed and tested for potential pathogens prior to any transfer of fish. There are no surrogate (e.g. brook trout or rainbow trout) fish available from below the Threemile Creek pond for testing. Approved transfers will commence pending negative results of required disease testing. *Myxobolus cerebralis* cannot be vertically transferred from spawning adults to their progeny. However, Silver Creek near Lake Helena has tested positive for *M. cerebralis*, the parasite that causes Whirling Disease (Table 1). These samples were collected from waters greater than 10 miles from Threemile Creek. In addition, two irrigation reservoirs on Threemile Creek act as barriers to upstream movement of fish. Threemile Creek Pond has tested negative for *M. cerebralis* (Table 1).

Table 1. Fish disease history – Silver Creek Drainage.

Location	Date	Species	# Fish	Results
Silver Creek-lower	5/9/96	Brown Trout	50	Negative for <i>M. cerebralis</i>
	10/1/98	Brown Trout	60	Positive for <i>M.cerebralis</i>
	10/12/99	Brown Trout	60	Positive for <i>M.cerebralis</i>
	8/10/00	Brown Trout	60	Positive for <i>M.cerebralis</i>
	10/24/02	Brown Trout	60	Positive for <i>M.cerebralis</i>
	4/5/04	Brown Trout	60	Positive for <i>M.cerebralis</i>
Threemile Creek-pond	5/3/05	Cutthroat	4	Negative for <i>M. cerebralis</i>

Genetic Analyses: Whole fish were collected from Threemile Creek for gel electrophoresis analysis in 2001 (N=30). In 2005, fin clips were collected for PINE analysis (N=25). Only alleles characteristic of WCT were detected in samples from both these dates. With the combined sample size of 55, there is a better than 99% chance of detecting as little as 1% rainbow or Yellowstone cutthroat trout genetic contribution to a hybrid swarm.

Aquatic Invertebrates and Amphibians: Invertebrate and amphibian communities in Cottonwood Creek developed in the presence of fish. Impacts on invertebrate and amphibian species from introduced non-hybridized WCT will be similar to those recently experienced (prior to piscicide treatment) in this watershed.

B. Impacts to the Human Environment

Land Use – Section 7a of Checklist

The proposed project would have no impact on productivity or profitability of the area. The Beartooth Game Range is managed by Montana Fish, Wildlife & Parks for the benefit of fish and wildlife resources as well as the enjoyment of the public.

Aesthetics/Recreation – *Section 11c of Checklist*

Cottonwood Creek is currently fishless above the fish barrier. The establishment of a robust population of WCT in Cottonwood Creek will provide an opportunity to fish for genetically pure WCT, Montana's State Fish.

III. Discussion of Reasonable Alternatives

1) No Action

Do not transfer any fish into Cottonwood Creek and maintain as a fishless aquatic system. If the no action alternative was adopted, Cottonwood Creek will not have a fishery above the fish barrier.

2) Proposed Action:

Westslope cutthroat trout would be transferred from Threemile Creek to Cottonwood Creek. The total miles of stream inhabited by genetically unaltered WCT in the Upper Missouri River Drainage would increase by 8 miles (nearly double the current miles). Under this alternative, the unique genetic legacy of the donor WCT population would be substantially more secure than at the present time. Threemile Creek WCT are currently on private property and face the uncertainty of a future sale and breakup into smaller lots. Should Threemile Creek WCT be lost due to unwanted transfers of non-native fish or habitat degradation, re-founding with Cottonwood Creek fish would be an option. FWP has agreed to take actions to benefit WCT (Conservation Agreement: MFWP 2007) and this project would provide a substantial contribution to WCT conservation in Montana.

3) Re-establish a Non-native Fishery

Cottonwood Creek could be stocked with non-native fishes (i.e. rainbow trout) with an allowable harvest. Under this alternative the work completed thus far to create a native WCT fishery would be wasted. Efforts to create a native WCT fishery have included construction of a concrete fish barrier and four piscicide treatments. This alternative would not benefit WCT.

IV. Environmental Assessment Conclusion Section

1) **Is an EIS required?** This environmental review demonstrates that the impacts of this proposed project are not significant. The proposed action would provide substantial benefits to WCT and reduce the potential loss of genetic material from Threemile Creek with minimal impact on the physical, biological, or the human environment, and thus would not require the detailed environmental review of an Environmental Impact Statement.

References

- Allendorf, F.W. and R.F. Leary. 1988. Conservation and distribution of genetic variation in a polytypic species, the cutthroat trout. *Conservation Biology*. 2 (2):170-184.
- Dunham, J.B., S.B. Adams, R.E. Schroeter, and D.C. Novinger. 2002. Alien invasions in aquatic ecosystems: toward an understanding of brook trout invasions and potential impacts on inland cutthroat trout in western North America. *Reviews in Fish Biology and Fisheries*. 12: 373-391.
- Hitt, N.P., C.A. Frissell, C.C. Muhlfeld, and F.W. Allendorf. 2003. Spread of hybridization between native westslope cutthroat trout, *Oncorhynchus clarki lewisi*, and nonnative rainbow trout, *Oncorhynchus mykiss*. *Canadian Journal of Fisheries and Aquatic Sciences*. 60:1440-1451.
- Leary, R. F., F. W. Allendorf and G. K. Sage. 1995. Hybridization and introgression between introduced and native fish. *American Fisheries Society Symposium, American Fisheries Society*, 15: 91-103.
- Leary, R.F. 2001 – 2005. Reports from Montana Trout and Salmon Genetics Laboratory. University of Montana, Missoula, MT.
- MFWP (Montana Department of Fish, Wildlife and Parks). 2007. Memorandum of understanding and conservation agreement for westslope cutthroat trout and Yellowstone cutthroat trout in Montana. Helena, Montana.
- Moser, D., A. Tews, and M. Enk. 2007. Northcentral Montana cooperative cutthroat restoration project; 2006 Annual Report. Montana Fish, Wildlife & Parks, Great Falls, MT.
- Peterson, D.P., K.D. Fausch, G.C. White. 2004. Population ecology of an invasion: effects of brook trout on native cutthroat trout. *Ecological Applications*. 14(3):754-772.
- Shepard, B.B., B.E. May and W. Urie. 2003. Status of westslope cutthroat trout (*Oncorhynchus clarki lewisi*) in the United States: 2003. Westslope Cutthroat Interagency Conservation Team. 94 pp.
- Stockwell, C.A. and P.L. Leberg. 2002. Ecological genetics and the translocation of native fishes: emerging experimental approaches. *Western North American Naturalist*. 62(1):32-38.
- Wang, S., J.J. Hard, and F. Utter. 2002. Salmonid inbreeding: a review. *Reviews in Fish Biology and Fisheries*. 11:301-319.

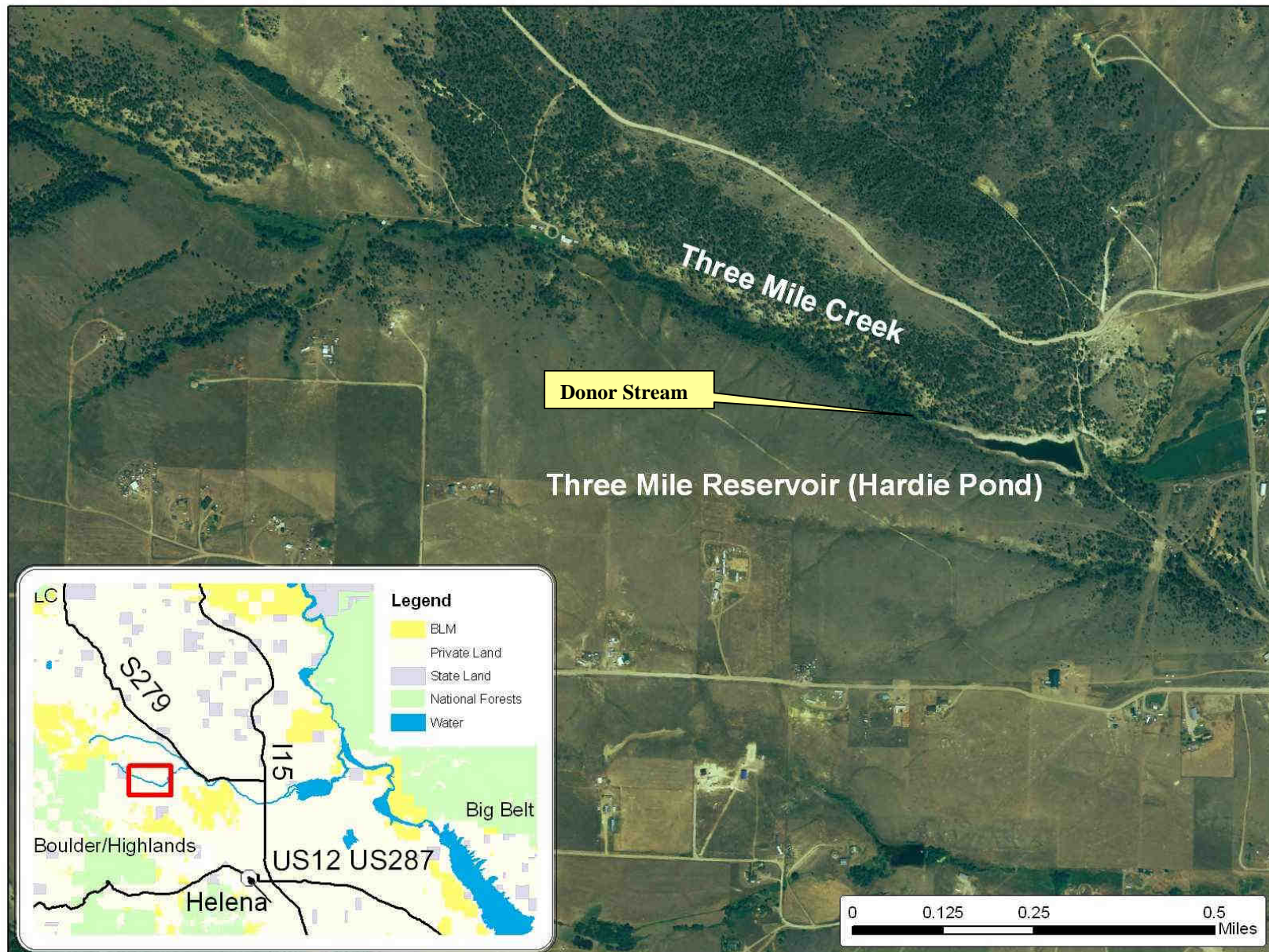


Figure 1. Area map showing Threemile Cr. and vicinity.

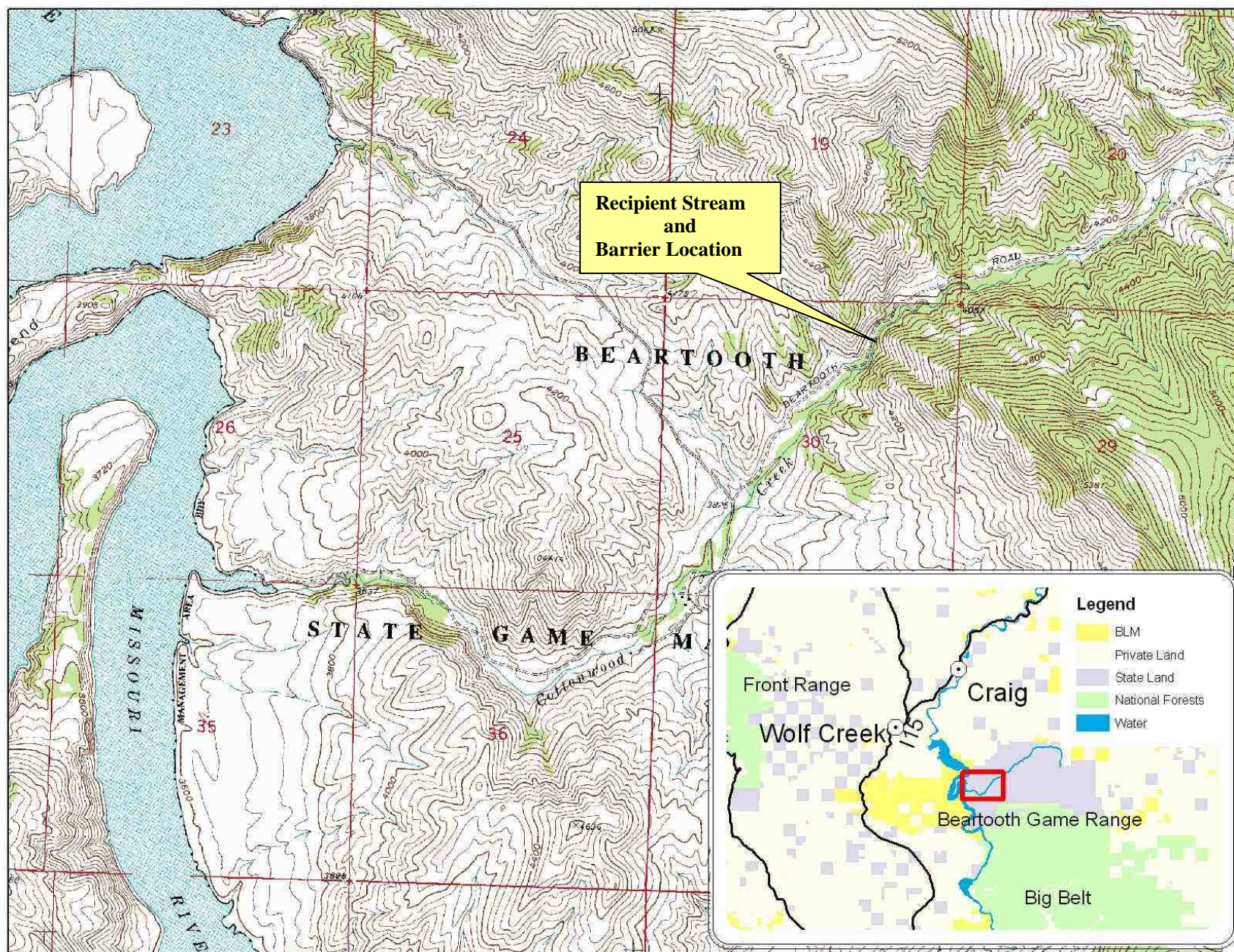


Figure 2. Area map showing Cottonwood Creek and vicinity.

Montana Department of Fish, Wildlife and Parks
4600 Giant Springs Road, Great Falls, MT 59405

Environmental Assessment Checklist

Project: Transfer of eyed eggs from Threemile Creek to Cottonwood Creek (Upper Missouri River Drainage) **Division:** Fisheries Division

Description of Project: Montana Fish, Wildlife & Parks propose transferring non-hybridized westslope cutthroat trout eyed eggs (WCT: *Oncorhynchus clarkii lewisi*) from Threemile Creek to Cottonwood Creek in the Upper Missouri River Drainage. Eyed eggs will be hatched in remote site incubators. Threemile Creek (donor) is located on private property in the Boulder – Highlands foothill area near Helena. WCT will be introduced into Cottonwood Creek on the Beartooth Game Range.

A. PHYSICAL ENVIRONMENT

1. <u>LAND RESOURCES</u>	IMPACT Unknown	None	Minor	Potentially Significant	Can Impact Be Mitigated	Comment Index
Will the proposed action result in:						
a. Soil instability or changes in geologic substructure?		X				
b. Disruption, displacement, erosion, compaction, moisture loss, or over-covering of soil which would reduce productivity or fertility?		X				
c. Destruction, covering or modification of any unique geologic or physical features?		X				
d. Changes in siltation, deposition or erosion patterns that may modify the channel of a river or stream or the bed or shore of a lake?		X				
e. Exposure of people or property to earthquakes, landslides, ground failure, or other natural hazard?		X				
2. <u>WATER</u>	IMPACT Unknown	None	Minor	Potentially Significant	Can Impact Be Mitigated	Comment Index
Will the proposed action result in:						
a. Discharge into surface water or any alteration of surface water quality including but not limited to temperature, dissolved oxygen or turbidity?		X				
b. Changes in drainage patterns or the rate and amount of surface runoff?		X				
c. Alteration of the course or magnitude of floodwater or other flows?		X				
d. Changes in the amount of surface water in any water body or creation of a new water body?		X				
e. Exposure of people or property to water related hazards such as flooding?		X				
f. Changes in the quality of groundwater?		X				
g. Changes in the quantity of groundwater?		X				

h. Increase in risk of contamination of surface or groundwater?		X				
i. Effects on any existing water right or reservation?		X				
j. Effects on other water users as a result of any alteration in surface or groundwater quality?		X				
k. Effects on other users as a result of any alteration in surface or groundwater quantity?		X				
l. Will the project affect a designated floodplain?		X				
m. Will the project result in any discharge that will affect federal or state water quality regulations? (Also see 2a)		X				
3. AIR	IMPACT Unknown	None	Minor	Potentially Significant	Can Impact Be Mitigated	Comment Index
Will the proposed action result in:						
a. Emission of air pollutants or deterioration of ambient air quality? (also see 13 (c))		X				
b. Creation of objectionable odors?		X				
c. Alteration of air movement, moisture, or temperature patterns or any change in climate, either locally or regionally?		X				
d. Adverse effects on vegetation, including crops, due to increased emissions of pollutants?		X				
e. Will the project result in any discharge, which will conflict with federal or state air quality regulations?		X				
4. VEGETATION	IMPACT Unknown	None	Minor	Potentially Significant	Can Impact Be Mitigated	Comment Index
Will the proposed action result in:						
a. Changes in the diversity, productivity or abundance of plant species (including trees, shrubs, grass, crops, and aquatic plants)?		X				
b. Alteration of a plant community?		X				
c. Adverse effects on any unique, rare, threatened, or endangered species?		X				
d. Reduction in acreage or productivity of any agricultural land?		X				
e. Establishment or spread of noxious weeds?		X				
f. Will the project affect wetlands, or prime and unique farmland?		X				
5. FISH/WILDLIFE	IMPACT Unknown	None	Minor	Potentially Significant	Can Impact Be Mitigated	Comment Index
Will the proposed action result in:						
a. Deterioration of critical fish or wildlife habitat?		X				
b. Changes in the diversity or abundance of game animals or bird species?			X			p. 2-4
c. Changes in the diversity or abundance of non-game species?		X				

d. Introduction of new species into an area?				X Beneficial		p. 2-4 Need for Action Section
e. Creation of a barrier to the migration or movement of animals?		X				
f. Adverse effects on any unique, rare, threatened, or endangered species?		X				
g. Increase in conditions that stress wildlife populations or limit abundance (including harassment, legal or illegal harvest or other human activity)?		X				
h. Will the project be performed in any area in which T&E species are present, and will the project affect any T&E species or their habitat? (Also see 5f)		X				
i. Will the project introduce or export any species not presently or historically occurring in the receiving location? (Also see 5d)		X				

HUMAN ENVIRONMENT

6. NOISE/ELECTRICAL EFFECTS	IMPACT Unknown	None	Minor	Potentially Significant	Can Impact Be Mitigated	Comment Index
Will the proposed action result in:						
a. Increases in existing noise levels?		X				
b. Exposure of people to severe or nuisance noise levels?		X				
c. Creation of electrostatic or electromagnetic effects that could be detrimental to human health or property?		X				
d. Interference with radio or television reception and operation?		X				
7. LAND USE	IMPACT Unknown	None	Minor	Potentially Significant	Can Impact Be Mitigated	Comment Index
Will the proposed action result in:						
a. Alteration of or interference with the productivity or profitability of the existing land use of an area?		X				p.3
b. Conflict with a designated natural area or area of unusual scientific or educational importance?		X				
c. Conflict with any existing land use whose presence would constrain or potentially prohibit the proposed action?		X				
d. Adverse effects on or relocation of residences?		X				
8. RISK/HEALTH HAZARDS	IMPACT Unknown	None	Minor	Potentially Significant	Can Impact Be Mitigated	Comment Index
Will the proposed action result in:						
a. Risk of an explosion or release of hazardous substances (including, but not limited to oil, pesticides, chemicals, or radiation) in the event of an accident or other forms of disruption?		X				

b. Affect an existing emergency response or emergency evacuation plan or create a need for a new plan?		X				
c. Creation of any human health hazard or potential hazard?		X				
d. Will any chemical toxicants be used?		X				
9. COMMUNITY IMPACT	IMPACT Unknown	None	Minor	Potentially Significant	Can Impact Be Mitigated	Comment Index
Will the proposed action result in:						
a. Alteration of the location, distribution, density, or growth rate of the human population of an area?		X				
b. Alteration of the social structure of a community?		X				
c. Alteration of the level or distribution of employment or community or personal income?		X				
d. Changes in industrial or commercial activity?		X				
e. Increased traffic hazards or effects on existing transportation facilities or patterns of movement of people and goods?		X				
10. PUBLIC SERVICES/TAXES/UTILITIES	IMPACT Unknown	None	Minor	Potentially Significant	Can Impact Be Mitigated	Comment Index
Will the proposed action result in:						
a. Will the proposed action have an effect upon or result in a need for new or altered governmental services in any of the following areas: fire or police protection, schools, parks/recreational facilities, roads or other public maintenance, water supply, sewer or septic systems, solid waste disposal, health, or other governmental services? If any, specify: _____		X				
b. Will the proposed action have an effect upon the local or state tax base and revenues?		X				
c. Will the proposed action result in a need for new facilities or substantial alterations of any of the following utilities: electric power, natural gas, other fuel supply or distribution systems, or communications?		X				
d. Will the proposed action result in increased use of any energy source?		X				
e. Define projected revenue sources		X				
f. Define projected maintenance costs		X				
11. AESTHETICS/RECREATION	IMPACT Unknown	None	Minor	Potentially Significant	Can Impact Be Mitigated	Comment Index
Will the proposed action result in:						
a. Alteration of any scenic vista or creation of an aesthetically offensive site or effect that is open to public view?		X				
b. Alteration of the aesthetic character of a community or neighborhood?		X				

c. Alteration of the quality or quantity of recreational/tourism opportunities and settings? (Attach Tourism Report)				X Beneficial		p. 4
d. Will any designated or proposed wild or scenic rivers, trails or wilderness areas be impacted? (Also see 11a, 11c)		X				
12. CULTURAL/HISTORICAL RESOURCES	IMPACT Unknown	None	Minor	Potentially Significant	Can Impact Be Mitigated	Comment Index
Will the proposed action result in:						
a. Destruction or alteration of any site, structure or object of prehistoric historic or paleontological importance?		X				
b. Physical change that would affect unique cultural values?		X				
c. Effects on existing religious or sacred uses of a site or area?		X				
d. Will the project affect historic or cultural resources?		X				
13. SUMMARY EVALUATION OF SIGNIFICANCE	IMPACT Unknown	None	Minor	Potentially Significant	Can Impact Be Mitigated	Comment Index
Will the proposed action, considered as a whole:						
a. Have impacts that are individually limited, but cumulatively considerable? (A project or program may result in impacts on two or more separate resources, which create a significant effect when considered together or in total.)		X				
b. Involve potential risks or adverse effects which are uncertain but extremely hazardous if they were to occur?		X				
c. Potentially conflict with the substantive requirements of any local, state, or federal law, regulation, standard or formal plan?		X				
d. Establish a precedent or likelihood that future actions with significant environmental impacts will be proposed?		X				
e. Generate substantial debate or controversy about the nature of the impacts that would be created?		X				
f. Is the project expected to have organized opposition or generate substantial public controversy? (Also see 13e)		X				
g. List any federal or state permits required.						

Other groups or agencies contacted or which may have overlapping jurisdiction: None

List of Individuals or groups contributing to this EA: Ken Staigmiller, Fish Health Coordinator, FWP, Great Falls, MT; Eric Roberts, Fish Biologist, FWP, Helena, MT.

List of all agencies and individuals who have been notified of this proposed transfer: Public notification via the FWP Web Site (<http://fwp.mt.gov/publicnotices>).

Recommendation concerning preparation of EIS: No EIS Required. Impacts of action expected to be minor. Benefits to westslope cutthroat trout are expected to be significant.

EA prepared by: David Moser, Fisheries Biologist, FWP, Great Falls, MT. **Date:** Jan 21, 2009.

Comments will be accepted until: March 9, 2009

Comments should be sent to: David Moser, FWP, c/o USFS, P.O. Box 869, Great Falls, MT 59403;
dmoser@mt.gov